

2025 Level II Topic Outlines

Fixed Income

LEARNING OUTCOMES

The Term Structure and Interest Rate Dynamics

The candidate should be able to:

- describe relationships among spot rates, forward rates, yield to maturity, expected and realized returns on bonds, and the shape of the yield curve
- describe how zero-coupon rates (spot rates) may be obtained from the par curve by bootstrapping
- describe the assumptions concerning the evolution of spot rates in relation to forward rates implicit in active bond portfolio management
- describe the strategy of rolling down the yield curve
- explain the swap rate curve and why and how market participants use it in valuation
- calculate and interpret the swap spread for a given maturity
- describe short-term interest rate spreads used to gauge economy-wide credit risk and liquidity risk
- explain traditional theories of the term structure of interest rates and describe the implications of each theory for forward rates and the shape of the yield curve
- explain how a bond's exposure to each of the factors driving the yield curve can be measured and how these exposures can be used to manage yield curve risks
- explain the maturity structure of yield volatilities and their effect on price volatility
- explain how key economic factors are used to establish a view on benchmark rates, spreads, and yield curve changes

The Arbitrage-Free Valuation Framework

The candidate should be able to:

- explain what is meant by arbitrage-free valuation of a fixed-income instrument
- calculate the arbitrage-free value of an option-free, fixed-rate coupon bond
- describe a binomial interest rate tree framework
- describe the process of calibrating a binomial interest rate tree to match a specific term structure
- describe the backward induction valuation methodology and calculate the value of a fixed-income instrument given its cash flow at each node
- compare pricing using the zero-coupon yield curve with pricing using an arbitrage-free binomial lattice
- describe pathwise valuation in a binomial interest rate framework and calculate the value of a fixed-income instrument given its cash flows along each path
- describe a Monte Carlo forward-rate simulation and its application
- describe term structure models and how they are used

Valuation and Analysis of Bonds with Embedded Options

The candidate should be able to:

- describe fixed-income securities with embedded options
- explain the relationships between the values of a callable or puttable bond, the underlying option-free (straight) bond, and the embedded option
- describe how the arbitrage-free framework can be used to value a bond with embedded options
- explain how interest rate volatility affects the value of a callable or puttable bond
- explain how changes in the level and shape of the yield curve affect the value of a callable or puttable bond
- calculate the value of a callable or puttable bond from an interest rate tree
- explain the calculation and use of option-adjusted spreads
- explain how interest rate volatility affects option-adjusted spreads
- calculate and interpret effective duration of a callable or puttable bond
- compare effective durations of callable, puttable, and straight bonds
- describe the use of one-sided durations and key rate durations to evaluate the interest rate sensitivity of bonds with embedded options
- compare effective convexities of callable, puttable, and straight bonds
- calculate the value of a capped or floored floating-rate bond
- describe defining features of a convertible bond
- calculate and interpret the components of a convertible bond's value
- describe how a convertible bond is valued in an arbitrage-free framework
- compare the risk–return characteristics of a convertible bond with the risk–return characteristics of a straight bond and of the underlying common stock

Credit Analysis Models

The candidate should be able to:

- explain expected exposure, the loss given default, the probability of default, and the credit valuation adjustment
- explain credit scores and credit ratings
- calculate the expected return on a bond given transition in its credit rating
- explain structural and reduced-form models of corporate credit risk, including assumptions, strengths, and weaknesses
- calculate the value of a bond and its credit spread, given assumptions about the credit risk parameters
- interpret changes in a credit spread

- explain the determinants of the term structure of credit spreads and interpret a term structure of credit spreads
- compare the credit analysis required for securitized debt to the credit analysis of corporate debt

Credit Default Swaps

The candidate should be able to:

- describe credit default swaps (CDS), single-name and index CDS, and the parameters that define a given CDS product
- describe credit events and settlement protocols with respect to CDS
- explain the principles underlying and factors that influence the market's pricing of CDS
- describe the use of CDS to manage credit exposures and to express views regarding changes in the shape and/or level of the credit curve
- describe the use of CDS to take advantage of valuation disparities among separate markets, such as bonds, loans, equities, and equity-linked instruments